

Claims:

1. A method of making a lithography stage, said method comprising the following steps:

- (a) providing a Ti doped SiO₂ glass powder comprised of a plurality of particles of Ti doped SiO₂ glass;
- (b) providing a binder, said binder for binding said Ti doped SiO₂ glass particles together;
- (c) depositing a layer of said Ti doped SiO₂ glass powder in a confined region to provide an underlying layer;
- (d) applying said binder to one or more selected regions of said layer of Ti doped SiO₂ glass powder to bind at least two of said Ti doped SiO₂ glass particles together to form a primitive, said applying binder bonding said glass powder together at said one or more selected regions;
- (e) depositing an above layer of said Ti doped SiO₂ glass powder above said deposited layer;
- (f) applying said binder to one or more selected regions of said above layer with said binder bonding said glass powder together at said one or more selected regions;
- (g) repeating steps (e) and (f) a selected number of times to produce a selected number of successive layers with said binder bonding said successive layers together;
- (h) removing unbonded glass powder which is not at said one or more selected regions to provide a bonded Ti doped SiO₂ glass powder lithography stage structure.

2. A method as claimed in claim 1, further including sintering said bonded Ti doped SiO₂ glass lithography stage structure into a densified glass lithography stage structure.

3. A method as claimed in claim 2 wherein sintering into a densified glass lithography stage structure includes sintering at a temperature of at least 1100°C.

4. A method as claimed in claim 2 wherein sintering into a densified glass lithography stage structure includes hot isostatic pressing.

5. A method as claimed in claim 1, wherein applying said binder includes depositing said binder to form a skeletal network.

5 6. A method as claimed in claim 1, wherein applying said binder includes depositing said binder to form a lithography wafer receiver.

7. A method as claimed in claim 6 wherein depositing said binder to form a lithography wafer receiver includes forming a flat planar surface.

10 8. A method as claimed in claim 7 further including depositing said binder to form a skeletal network frame for said lithography wafer receiver.

15 9. A method as claimed in claim 1 wherein applying said binder includes depositing said binder to form a lithography mask receiver .

10. A method as claimed in claim 1 wherein applying said binder includes depositing said binder to form a mirror surface.

20 11. A method as claimed in claim 1 wherein said Ti doped SiO₂ glass powder contains 3 to 20 wt. % TiO₂.

12. A method as claimed in claim 1, wherein providing a binder comprises providing a mixture of H₂O and Ti doped SiO₂ glass soot.

25 13. A method as claimed in claim 12 wherein said mixture of H₂O and Ti doped SiO₂ glass soot includes ammonia.

30 14. A method as claimed in claim 1 wherein providing a Ti doped SiO₂ glass powder includes providing a conglomerated Ti doped SiO₂ glass powder comprised a plurality of cemented together primary glass particles .

15. A method as claimed in claim 14 wherein said primary glass particles are cemented together with an organic binder.

16. A method as claimed in claim 15 wherein providing a binder comprises providing a
5 water binder, said water binder for reactivating said organic binder.

17. A method as claimed in claim 2 wherein sintering includes sintering in a vacuum.

18. A method as claimed in claim 5 wherein forming a skeletal network includes forming a web structure with a wall thickness \leq 3 mm.

19. A method as claimed in claim 1, wherein applying said binder to selected regions includes projecting a plurality of binder droplets from a binder deposition head.

20. A method as claimed in claim 1 wherein applying said binder to selected regions includes ink jet print depositing said binder.

21. A method as claimed in claim 1 wherein depositing said Ti doped I glass powder includes depositing with a powder distribution head.

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22. A method as claimed in claim 1 wherein said Ti doped SiO_2 glass powder has an average particle size \geq 10 microns.

23. A method as claimed in claim 1 wherein said Ti doped SiO_2 glass powder has an
25 average particle size \geq 20 microns.

24. A method as claimed in claim 19 further including providing relative motion between said binder deposition head and said deposited layer of glass powder.

30 25. A method of making a lithography stage, said method comprising the following steps:
(a) providing a plurality of glass particles;
(b) providing a binder, said binder for binding said glass particles together;

10 (c) depositing a layer of said glass particles in a confined region to provide an underlying layer;

5 (d) applying said binder to one or more selected regions of said layer of glass particles to bind at least two of said glass particles together to form a primitive, said applying binder bonding said glass particles together at said one or more selected regions;

15 (e) depositing an above layer of said glass particles above said deposited layer;

20 (f) applying said binder to one or more selected regions of said above layer with said binder bonding said glass particles together at said one or more selected regions;

(g) repeating steps (e) and (f) a selected number of times to produce a selected number of successive layers with said binder bonding said successive layers together;

removing unbonded glass particles which are not at said one or more selected regions to provide a bonded glass particle lithography stage structure.

15 26. A method as claimed in claim 25, further including sintering said bonded glass particle lithography stage structure into a densified glass lithography stage structure.

20 27. A method as claimed in claim 26 wherein sintering into a densified glass lithography stage structure includes sintering at a temperature of at least 1100°C.

25 28. A method as claimed in claim 26 wherein sintering into a densified glass lithography stage structure includes hot isostatic pressing.

29. A method of making an EUV lithography structure, said method comprising the following steps:

(a) providing a plurality of glass particles;

(b) providing a binder, said binder for binding said glass particles together;

(c) depositing a layer of said glass particles in a confined region to provide an underlying layer;

30 (d) applying said binder to one or more selected regions of said layer of glass particles to bind at least two of said glass particles together to form a primitive, said

applying binder bonding said glass particles together at said one or more selected regions;

(e) depositing an above layer of said glass particles above said deposited layer;

(f) applying said binder to one or more selected regions of said above layer with said binder bonding said glass particles together at said one or more selected regions;

5 (g) repeating steps (e) and (f) a selected number of times to produce a selected number of successive layers with said binder bonding said successive layers together;

(h) removing unbonded glass particles which are not at said one or more selected regions to provide a bonded glass particle EUV lithography structure.

10 30. A method as claimed in claim 29, further including sintering said bonded glass particle lithography structure into a densified EUV lithography structure.

15 31. A method as claimed in claim 30 wherein sintering into a densified EUV lithography structure includes sintering at a temperature of at least 1100°C.

32. A method as claimed in claim 30 wherein sintering into a densified EUV lithography structure includes hot isostatic pressing.